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# A STUDY OF SOME FACTORS RELATING TO SUCCESS AND FAILURE IN AN EXAMINATION AT A COMMERCIAL HIGH SCHOOL

A DISSERTATION
SUBMITTED TO THE GRADUATE FACULTY
IN CANDIDACY FOR THE DEGREE OF
MASTER OF ARTS

DEPARTMENT OF PHILOSOPHY.

BY

ALEXANDER BEATHIE CURRIE

EDMONTON, ALBERTA

MAY, 1932.

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Thesis
1932
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# I N D E X


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# THE MASTER'S THESIS.

## THE PROBLEM DEFINED:

The problem may be characterized as a study of some factors relating to success and failure in an examination at a Commercial High School.

## THE PROBLEM ANALYZED:

(a) Major Problem -- To inquire into the degree of relationship between students' success and failure at a commercial school examination and such factors as:

(1) General intelligence as determined by a modern mental test.

(2) Emotional stability as indicated by Woodworth-Cady Questionnaire.

(3) Attitude to success and failure.

(4) Term attendance at school.

(5) Age.

(6) Information concerning home study as reported by the student.

(b) Minor Problem -- To check the validity of the teachers' uniform examination at Christmas by:

(1) Correlating the scores of certain well-known achievement tests with those of the teachers' Examination.

(2) Correlating the results of a second examination with the results at Christmas.

(3) Correlating the results of a previous year's Christmas examination with those of the final examination of the Department of Education, in June.

WHERE THE STUDY WAS MADE:

The study here reported was made at McDougall Commercial High School at Edmonton. The data were collected during the months of December, January, and February, 1931-32, under classroom conditions during the writer's contact with the groups referred to.

Most of the data were obtained from Groups 3, 8, 11, and 12. The latter two are first year groups and have entered the commercial school directly from the elementary. Group 8 students are older; about half of them representing repeaters who have not obtained a sufficient number of units to be promoted to a second year class. The other half are students who have had one year or more at an academic high school. Group 3 is entirely a second year class. All the students of this group obtained their units in the first year course of study. Other groups were used in validating certain tests. These are mentioned in the report.

THEORETICAL BACKGROUND OF THE PROBLEM:

Because many students who are seeking admittance to our academic high schools in this decade have neither the mental equipment nor the personal qualities requisite for even a sporting chance of reasonable success, alternative curricula have had to be devised to meet their needs. It has been repeatedly demonstrated that a large proportion of these students have no intention of seeking entrance to the professions. It merely means that they are subject either to

the compulsory school attendance act or parental pressure. Failing to see either the immediate or ultimate benefits of their courses of study, they drift along only to meet disappointment and failure at the end of the year. Obviously, such students should be diverted from academic pursuits and directed into some other way better suited to their needs.

One of these alternatives is the Commercial Curriculum. With the expansion of commerce and industry has come an insistent demand for a large army of clerical helpers. Many of these positions require some special technical skill like stenography and typewriting; others require a special technical knowledge like Bookkeeping. It is the chief aims of the commercial school to give its students a thorough grounding in fundamentals and to equip them with those special skills which find a ready market in the business world.

Unfortunately, in the commercial school as elsewhere there are failures as well as successes. Under our present system, the successful completion of the commercial curriculum means passing the final examinations. Here it might be questioned whether our system is not over-rigid. Does it not seem reasonable that, when the curriculum was made for the student, it should be made to conform to the needs of the student, and not the student to the requirements of the curriculum? The fact remains, however, that there are certain factors which are intimately related to success and failure in a commercial course of study. It is hoped that this investigation may throw some light on some of them.

REVIEW OF THE LITERATURE ON THE SUBJECT.

Articles relating directly to our subject are few in number, if there are any at all. Most of the studies that have appeared concern the success and failure in actual business life in relation to various factors studied while in school. For example, Charters (1) showed that the correlation between intelligence test scores and success as a salesman dropped down below and hovered around zero.

Comparing the achievement over three years of children clustering at 165 I.Q. with that of children clustering at 146 I.Q., Hollingsworth and Cobb (8) found that those who test higher in intelligence also stand higher in achievement, both at the outset of the three-year period and throughout it.

Heilman (9) investigated the relative influence upon school achievement of mental age, school attendance, and socio-economic status of the home. Ten-year old children were found to differ widely in educational achievement. The investigator's results show that about 50 percent of this variation was due to mental age; less than 13 percent of this variation, to school training; not over one percent, to the socio-economic status of the home.

Studying the effect of length of school attendance upon mental and educational ages, Denworth (10) observed that length of school attendance does not account for differences in mental and educational development. The writer suggested that high correlations between mental and educational ages probably indicated a causal relationship.

Jones and Ruch (11) investigated the relation between the achievement of 280 college freshmen and the amount of time spent in study. It was found that inferior students study somewhat more hours, but that this slight increase in duration of study does not compensate at all for their lack of ability.

Several studies have been made which bear on some aspects of our problem and indirectly to the whole problem itself. May (4), investigating with 450 freshmen at the University of Syracuse, found a correlation between success judged on an honor-point basis and intelligence test scores of plus 0.60. When he compared success with the amount of time devoted to study the correlation was plus 0.32, indicating that industry alone is not a good index of probable success. However, when he combined intelligence tests scores with the data on the students' industry, his correlation coefficient rose to plus 0.80. He concludes with this statement, "Success is too complexly conditioned to be handled by any formula so simple as mental alertness and intellectual dullness."

Arlitt and Hall (2) found that neither the Thurstone Intelligence test nor the IQ rating correlated as highly with marks received at college as did the grades received on the entrance examinations. They also conclude that the IQ's selected students whose work proved poorest better than did entrance examinations.

Odell (3), in studying the relation between attendance and school achievement, states that the percent of time that pupils attend school appears to condition achievement but to a lesser extent than many have supposed. He also found, as

would be expected, a very close relation between a student's average school mark throughout a term and his attendance at school. In their study of incentives in learning certain mechanical tasks and muscular habits, Book and Norvell (5) observe that each group of individuals when they are being interested in the fact of their improvement as such will make rapid and continuous gains, but cease suddenly to improve when subjected to the opposite set of conditions. They further note that some students, in addition to having their interest aroused in their own improvement and its possibility, need to be shown exactly how to proceed to make such gains.

Gilchrist (7) showed that praise and reproof of students were related to their success and failure. That competition was an important factor in a student's performance was demonstrated by Whittemore.

GENERAL METHOD OF PROCEDURE:

For purposes of this study "success" has been arbitrarily defined as the attainment of a minimum of 55%, being the average of the marks obtained at the Christmas examinations in all the units carried. "Failure" is defined as the attainment of less than 50% in the same examinations mentioned above. The group between 50-55% may be disregarded for the purpose of this study as doubtful, borderline cases.

Four groups were then selected. Two of them, numbers eleven and twelve, represent first year students who have entered commercial high school with no previous preparation in an academic high school. Group three is a fairly homogeneous group of second year students. Group eight is a mixed group

of new students who have studied grade nine and ten units in an academic high school and some repeaters who failed to get sufficient units in their first year to be promoted to a second year class. These repeaters are indicated by an asterisk in the accompanying table. The group number here is the school designation.

On the basis of the marks obtained on the Christmas examination, each of the four groups was divided into two sections: (1) a successful section each member of which attained an average of at least 55% and (2) a failure section each member of which had an average of less than 50%. The numbers in the groups will be indicated by the following table:

TABLE 1.

| | Group 3 | Group 8 | Group 11 | Group 12 | Total |
|---|---|---|---|---|---|
| Successes | 17 | 21 | 21 | 14 | 73. |
| Failures | 9 | 10 | 11 | 16 | 46. |

To each of these groups the British Columbia School Survey test of General Intelligence and, in some cases, the Terman Group test of Mental Ability were given during the month of January. The school attendance for the fall term September 1st to December 21 was obtained from the teachers' registers in which an accurate record is kept. The age was recorded as at December 31st.

The starting point of this investigation was a questionnaire to commercial teachers in which they were asked to indicate what were the chief causes of success and failure at commercial high school examinations. A copy of this questionnaire follows. It will be readily seen however that the purpose of this questionnaire was merely to open up the field.

QUESTIONNAIRE TO COMMERCIAL TEACHERS.

1. The following are some of the qualities necessary for the successful completion of the commercial high school course:

(1) Adaptability.

(2) Good Health.

(3) General Intelligence.

(4) Capacity for Industry.

(5) Personal Integrity.

(6) Punctuality.

(7) Alertness.

Which, in your opinion, are the three of greatest importance?

(1)

(2)

(3)

2. The following are some causes of failure. In how many cases out of one hundred would you estimate failure to be chiefly due to:

(1) Unfavorable home conditions ( )

(2) Excessive social activity ( )

(3) Over-fondness for sport ( )

(4) Lacking any goal in life ( )

(5) Malnutrition and disease ( )

(6) Physical defects e.g.defective eyesight ( )

(7) Mental or psychopathec disorders ( )

QUESTIONNAIRE (CONTINUED)

3. The following represents abilities in which students are frequently deficient:

(1) Problem solving.

(2) Good judgment.

(3) Memorization.

(4) Aesthetic appreciation.

(5) Power of sustained attention.

(6) Physical and mechanical cleverness.

The lack of what three, in your opinion, most seriously endangers a student's probable success in a commercial course?

(1)

(2)

(3)

4. Can you suggest any other causes of failure not covered by the above.

## RESULTS OF QUESTIONNAIRE TO COMMERCIAL TEACHERS.

QUESTION 1:

Each of eleven teachers selected three of the following factors which they considered contributed most to success. Their replies were distributed as follows:

| | |
|---|---|
| 1. Adaptability: | 3 |
| 2. Good Health: | 5 |
| 3. General Intelligence: | 11 |
| 4. Capacity for Industry: | 10 |
| 5. Personal Integrity: | 1 |
| 6. Punctuality: | 0 |
| 7. Alertness: | 3 |

QUESTION 2:

Each of the eleven teachers weighted each of the following factors as being of greater, mediocre, or lesser importance. Their answers were distributed as follows:

| | Greater | Mediocre | Lesser |
|---|---|---|---|
| 1. Unfavorable Home Conditions: | 1 | 3 | 2 |
| 2. Excessive Social Activity: | 3 | 3 | 2 |
| 3. Over-fondness for Sport: | 0 | 2 | 1 |
| 4. Lacking any Goal in Life: | 6 | 2 | 1 |
| 5. Malnutrition and Disease: | 1 | 1 | 1 |
| 6. Physical Defects: | 0 | 1 | 2 |
| 7. Mental or Psychopathic Disorders: | 0 | 1 | 1 |

QUESTIONNAIRE (CONT'D.)

QUESTION 3:

Each of the eleven teachers selected three of the following abilities the lack of which most seriously endangers a student's probable success. Their selections were distributed as follows:

1; Problem Solving Ability: 5

2. Good Judgment: 9

3. Memorization: 1

4. Aesthetic Appreciation: 2

5. Power of Sustained Attention: 11

6. Physical and Mechanical Cleverness: 5

QUESTION 4:

Other factors mentioned were:

1. Inadequate Academic grounding:

2. Influence of undesirable associates.

3. Poor attendance.

4. Smugness.

## SUMMARY OF THE RESULTS OF THE QUESTIONNAIRE.

A glance at the accompanying detailed statement of the results of the questionnaire to commercial teachers shows a surprising unanimity of opinion as to the causes of success and failure in the Commercial High School Course.

It was the indicated opinion of the eleven teachers canvassed that the qualities most essential for the successful completion of the Commercial High School course were "general intelligence" and "capacity for industry." The

SUMMARY (CONTINUED)

former they regarded as slightly more important. "Good health" ranked third with five votes, followed by "adaptability" and "alertness" which received three votes each.

Of the unfavorable factors mentioned the lack of a goal in life was regarded by the teachers as the chief cause of failure. "Excessive social activity" was rated second. These two factors together were weighted as having greater importance than the remaining five together. The two factors next in importance were "unfavorable home conditions" and "malnutrition and disease."

In the opinion of the teachers the abilities, the lack of which endangers most a student's chance of success, were: "power of sustained attention" and "good judgment." "Problem solving ability" and "physical and mechanical cleverness" were rated equally with five votes each out of a possible eleven.

Other factors closely related to success and failure, suggested by question (4) were: inadequate preparatory academic grounding, the acute influence of contacts made with students whose morals have sunken to a low level, poor attendance at school, smugness and general self-satisfaction, insufficient knowledge of the language, lack of interest, especially with boys, in certain subjects studied; e.g.: Shorthand.

In order to compare the emotional reactions of a successful section with those of an unsuccessful section, the Woodworth-Cady Questionnaire of Emotional Stability was given to Groups three and eight. The results are presented in tables 6, 7, 8, and 9.

Surmising further that a student's attitude to success and failure was closely related to actual achievement on an examination, a questionnaire to indicate this was devised. The assumption lying behind it was this: If a student has been repeatedly unsuccessful, he will develop a rationalized reaction to success. He will maintain that success in school is a matter of no very great importance. He may tell you that he is training himself physically through active participation in sports, or socially, by making a "good fellow" of himself. It is conceivable that such an attitude, while preserving his self-respect as an individual, would very greatly impair his success as a student. On the other hand, the successful student would be expected to give normal or natural answers. The questionnaire is scored by arbitrarily deciding what, in each case, is a normal or natural answer, thus getting at the unnatural or rationalized answers. The writer is aware of the many factors which might enter into a student's answer, besides his actual attitude to success and failure. Hence, no claims are made as to the reliability of the test. It is hoped that it may serve to indicate to a degree a student's mental attitude. In giving this test as well as the Woodworth Cady, the students were impressed with the necessity of giving honest answers without regard to what they ought to answer in each case. They were assured that none of their answers would ever be used against them in any way.

## QUESTIONNAIRE ON A STUDENT'S ATTITUDE TOWARD SUCCESS AND FAILURE.

1. Is success in school so very important? (yes)
2. Do you think good students often fail? (no )
3. Does failure in an examination worry you? (yes)
4. Do you work hard to please the teacher? (yes)
5. Aren't the poorest students generally the most successful in later life? (no )
6. Do you think hard work brings you better marks in school? (yes)
7. Do you think teachers should assign homework? (yes)
8. Do you think a student who doesn't work hard gets along just as well? (no )
9. Do you think it is so very important to do homework? (yes)
10. Do you think some subjects at Commercial are useless? (no )
11. Do you think examinations ever show how much you know? (yes)
12. Do you think one should have as much fun as possible when one is young? (no )
13. Do you think your success or failure at school depends much on your teacher? (yes)
14. Do you think hockey or basketball is as important as Bookkeeping or Shorthand? (no )
15. Do you think this school is a "dead" place in which to spend your time? (no )

QUESTIONNAIRE (CONT'D.)

16. Would you stop school if you could? (no )

17. Do you do better when the teachers make you work? (yes)

18. Does failure make you want to quit? (no )

19. When you fail, do you wish for another chance? (yes)

20. Do you let the useless subject slide? (no )

21. Do you let a subject go because you don't like the teacher? (no )

22. Do you wish you could drop any of your subjects? (no )

23. Do you worry much about what you will be able to do when you leave school? (yes)

24. Do you think other students are very much cleverer than you? (yes)

25. Do you think you could do about as well as the best student if you worked? (no )

26. Do you dislike students who work hard to lead the class? (no )

27. Do you think a "high" student often cheats? (no )

28. Do you think you would do better if you had better eyesight? (no )

29. Do you think you would do better if you had better hearing? (no )

30. Do you think you would do better if you attended school more regularly? (no )

31. Could you do better if your health was better? (no )

QUESTIONNAIRE (CONT'D.)

32. Could you do better if you had less work to do at home? (no )

33. Could you do better if your parents were kinder to you? (no )

34. Would your school work be better if your home life were pleasanter? (no )

35. Could you do better if you weren't so nervous? (no )

36. Could you do better if teachers were kinder to you? (no )

37. Does life seem like a lot of failures to you? (no )

38. Do you think your school work would be better if your parents were wealthier? (no )

39. Does your school work bore you or tire you? (no )

40. Could you do better if you weren't so afraid of other people? (no )

The next step seemed to be to get some data on the student's home study. Of course the most reliable information would best be obtained from a personal call on the parents. But in view of the numbers this seemed an impossible task. Hence resort was made to the students themselves. They were asked to report on the following:

QUESTIONNAIRE ON HOME STUDY:

1. During how many evenings per week on the average do you study school subjects? (Give number)

2. How many evenings per week on the average do you take off? (Give number) Note -- This is intended only to check No. 1.

3. How much time on the average do you spend in actual study each evening? (underline below)

(1) less than an hour

(2) about an hour

(3) two hours

(4) more than two hours

4. Have you a separate place to study away from everyone? (Yes or No)

5. Have you a parent, brother, sister, or anyone else who often helps you outside of school? (Yes or No)

The Commercial syllabus of studies may be roughly divided into three groups according to the nature of the subjects. Firstly, there is the Mathematical group, composed of Arithmetic, Rapid Calculation, and Bookkeeping. In order to verify the writer's belief that Bookkeeping was essentially mathematical, he correlated the Christmas examination marks of 75 students in Bookkeeping with those of Arithmetic. The coefficient of correlation was $.68 \pm .042$. This result seemed to justify the inclusion of Bookkeeping in the Mathematical group. The students' mathematical mark was obtained by taking the arithmetic mean of the marks in Arithmetic, Rapid Calculation and Bookkeeping. The same procedure was followed for the Stenographic group and the English group. No other correlations were made to justify the grouping arrangements. In the Stenographic group were Shorthand and Typewriting. The English group contained Literature, Business English and Commercial Correspondence, and Spelling. Other subjects like Penmanship, Secretarial Training, and Office Practice were not considered in this comparison.

At this point the scores of the students who were repeating a year were compared with those who were covering the work for the first time. With this in mind a table of 18 repeaters in the four groups under study was prepared. This appears in table 10.

It should be remembered here that, if the examination is a representative one the scores of commercial students may be expected to be more reliable than corresponding scores obtained in an academic high school. The reason for this is that com-

mercial subjects lend themselves better to objective treatment, For example, there can be no reasonable doubt as to a student's score in Typewriting . If at least three tests are given, as was the case here, the number of errors may be actually counted. No fears of the vitiating influence of teachers' fallible judgments need be entertained. The same is true in Shorthand. A symbol is either made correctly, or it is not. Likewise, in the Mathematical group, Bookkeeping and Arithmetic lend themselves only slightly to teachers' estimates. In the English group the granting of partial credits are more in evidence especially in English Literature and Business English. The use of good models in the latter may help to some extent, to correct this evil by standardizing teachers' judgments.

If the examination were not altogether a representative one, the result would not be serious because of the type of treatment given the scores. The examination was a uniform one, and any effect on the scores due to inattention to comprehensiveness would seem to be balanced out when a large number is considered. However, definite attempt was made to determine the reliability and representativeness of the examinations.

An objection might be urged here that probably the examination was not sufficiently comprehensive. To meet this, the writer correlated the results of the teachers' examinations at Christmas (average of marks allotted in all the units carried) of a parallel class from school year 1929-30 with those of the finals prepared and corrected by the Department

of Education. If the correlation coefficient proved high, it would indicate that teachers' examinations were about as comprehensive as those of the Department of Education. The correlation coefficient was surprisingly high, r = plus 0.94 $\pm$.012, with 45 cases.

Special examinations were prepared in Arithmetic and Rapid Calculation, and the results were correlated with those of the Christmas examination in these subjects. The correlation coefficient was plus 0.82 $\pm$ .026 with about 70 cases considered. These tests are reproduced below.

## SPECIAL TEST IN ARITHMETIC.

Question 1. By selling a farm for $6,785, I lost $189. For how much should I sell it to gain $189? Answer. $7163.

Question 2. A bookkeeper's salary is $85 per month. Each year he spends $648. How many months would be required to pay for a car costing $465? Answer. 15.

Question 3. Four percent of $700 is fourteen percent of what number? Answer. 200.

Question 4. Five men require four days to dig a 200 foot drain. How long would six men require to dig a 180 foot drain? Answer. 3 days.

Question 5. Seven times 3/4 of a number is six times 3/5 of 35. What is the number? Answer. 24.

Question 6. A box is 6 feet by 4 feet and contains 72 cubic feet. By how much should one increase its depth to make it hold 120 cubic feet? Answer. 2 feet.

Question 7. By selling 250 acres of land for $195.60 more than he paid for it, a man gained 24%. Find the cost per acre. Answer. $ 326.

Question 8. What is the gain % if 4/5 of a barrel of apples be sold at 7/8 of cost of whole barrel? Answer. 9 3/8%.

Question 9. At what rate per annum will $630 produce $30.24 interest in 219 days? Answer. 8%.

Question 10. Chairs are bought at $32 per dozen. What must be the selling price per set of three to yield 12½% profit? Answer. $ 9.

Question 11. The difference between 2/3 and 3/5 is what fraction of the product of 3 3/5 and 3 3/4? Answer. 2/405.

Question 12. What decimal is 2 feet 8 inches of two yards? Answer. .4

## SPECIAL TEST IN RAPID CALCULATION.

| | | |
|---|---|---|
| Question 1. | 675 plus 452 plus 785 plus 269. | Answer. 2181 |
| Question 2. | 8.64 plus 76.4 plus .003 plus 45. | Answer. 130.043 |
| Question 3. | 4/5 plus 3/4 plus 1/2. | Answer. 2 1/20 |
| Question 4. | 40% plus .25 plus 4/5. | Answer. 1 9/20 |
| Question 5. | 7806129 minus 3458641. | Answer. 4347488 |
| Question 6. | 369.812 minus 78.94345. | Answer. 290.86855 |
| Question 7. | Multiply 432 by 567. | Answer. 244944 |
| Question 8. | Multiply 918.2 by 2.06. | Answer. 1891.492 |
| Question 9. | Divide 7845 by 86. Show remainder. | Answer. 91--19. |
| Question 10. | Divide 69.3 by .042. | Answer. 1650 |

Question 11. Show the change out of a $10. bill given in payment for each of the following purchases:

| | | | | | |
|---|---|---|---|---|---|
| (a) 4.62 | Ans. 5;38 | (d) 2.88 | Ans. 7.12 | (g) 9.16 | Ans. .84 |
| (b) 8.96 | Ans. 1.04 | (e) 5.45 | Ans. 4.55 | (h) 6.33 | Ans. 3.67 |
| (c) 7.84 | Ans. 2.16 | (f) 3.71 | Ans. 6.29 | (i) 1.65 | Ans. 8.35 |
| | | (g) 4.45 | Ans. 5.55 | | |

Question 12. Fill in the blanks with the net price if the following information is given:

| List Price. | Successive Discounts. | Net Price. |
|---|---|---|
| (a) $200 | less 25% and 10% | ? (135) |
| (b) $960 | less 15% and 5% | ? (775.20) |
| (c) $750 | less 10% and 10% | ? ( 97.20) |
| (d) $750 | less 20% and 25% | ? (450) |

Question 13. Find the amount of the following bill:

| | |
|---|---|
| 25 yards cotton @ 40¢ | Answer. $10.00 |
| 17 yards flannel @ 24¢ | Answer. $ 4.08 |
| 34 yards calico @ 13¢ | Answer. $ 4.42 |
| 65 spools thread @ 3 for 7¢ | Answer. $ 1.52 |
| 18 yards print @ 34¢ | Answer .$ 6.12 |
| Total | $26.14 |
| less 10% | 2.61 |
| Net Value of bill | $23.53 |

Question 14. (a) Give the sum of all numbers between 86 and 94 inclusive. Answer. 810.

(b) Divide 24 x 16 x 25 by 18 x 60 x 4. Answer. 2 2/9.

To check up on the Bookkeeping examination, a standardized Bookkeeping achievement test, the Elwell-Fowlkes Bookkeeping test Form A, was given to two classes in January. This test appeared to be a very good one, and was equally well suited to Canadian students as to American. The results are shown in the table below. The coefficient of correlation is $0.62 \pm .056$ with 54 cases.

TABLE 1 A.

COMPARISON OF RESULTS ON BOOKKEEPING EXAMINATION.

AND ELWELL-FOWLKES BOOKKEEPING TEST.

| | Bookkeeping Examination. | Elwell-Fowlkes Bookkeeping Test. | | Bookkeeping Examination. | Elwell-Fowlkes Bookkeeping Test. |
|---|---|---|---|---|---|
| Allen | 50 | 52 | Bilinski | 58 | 63 |
| Banks | 70 | 58 | Cameron | 51 | 58 |
| Clarke M. | 93 | 53 | Carter | 63 | 55 |
| Cronk | 80 | 57 | Fawcett | 64 | 62 |
| Cuthbertson | 96 | 65 | Jays | 52 | 61 |
| Colville | 71 | 46 | Johnston | 66 | 61 |
| Ewasiuk | 61 | 69 | Lymburn | 50 | 64 |
| Glover | 39 | 47 | Parslow | 58 | 69 |
| Graville | 50 | 48 | Russel | 18 | 57 |
| Groat | 64 | 48 | Scott | 57 | 67 |
| Goldsworthy | 35 | 44 | Taylor D. | 28 | 57 |
| Hamilton | 37 | 48 | Warzaski | 52 | 69 |
| Homynyk | 13 | 40 | Weiss | 54 | 43 |
| Hope | 59 | 59 | Young | 73 | 74 |
| Hrynyk | 45 | 18 | Bernstein | 13 | 30 |
| Huston | 40 | 55 | Bogart | 65 | 68 |
| Hutton | 42 | 57 | Brown | 63 | 63 |
| Lange | 97 | 62 | Cunningham | 22 | 30 |
| Lewis | 55 | 44 | Fowler | 70 | 65 |
| Mays | 62 | 51 | Garfin | 50 | 69 |
| Murdock | 84 | 61 | Jones | 81 | 69 |
| Onions | 89 | 58 | Loftus | 38 | 71 |
| Porter | 78 | 60 | Melnyk | 25 | 68 |
| Quick | 90 | 57 | Taylor J. | 56 | 62 |
| Rourke | 82 | 69 | Webster | 65 | 69 |
| Syer | 61 | 48 | Calhoun | 70 | 63 |
| Turner | 57 | 60 | | | |
| Waywitha | 50 | 64 | | | |

| | | | |
|---|---|---|---|
| Average | 58 | $57 \pm .0918$ | $61 \pm .0918$ |
| Cases | | 54 | 54 |
| Sigma = | | 20.1 | 12.2 |

R = plus $0.62 \pm .056$

TABLE 2.

RAW SCORES ON CHRISTMAS EXAMINATIONS.

GROUP 3.

| 1931-1932. | Typewriting | Shorthand | Bookkeeping | Literature | British English | Spelling | Penmanship | Rapid Calculation |
|---|---|---|---|---|---|---|---|---|
| Anderson | 74 | 71 | 61 | -- | 46 | 61 | 70 | 71 |
| Baker | 51 | 48 | 31 | 45 | 45 | 55 | 60 | 51 |
| Barker | 53 | 58 | 52 | -- | 52 | 10 | 52 | 58 |
| Barker, C. | 60 | 74 | 67 | 73 | 68 | 52 | 62 | 65 |
| Bishop | 46 | 46 | 60 | 57 | 65 | 27 | 64 | 89 |
| Brackenburg | 70 | 74 | 53 | 50 | 63 | 71 | 54 | 66 |
| Bruce | 40 | 52 | 85 | 39 | 70 | 19 | 59 | 58 |
| Bruce, V. | 41 | 50 | 50 | 59 | 52 | 23 | 60 | 61 |
| Christophers | 60 | 42 | 40 | 75 | -- | 32 | 62 | -- |
| Cozak | 63 | 71 | 54 | -- | 56 | 49 | 55 | 77 |
| Craig | 60 | 60 | 63 | 73 | 81 | 60 | 66 | 53 |
| Culverhouse | 76 | 62 | -- | -- | 50 | 32 | 54 | 56 |
| Dann | 59 | 30 | 38 | -- | -- | 7 | 61 | -- |
| Daws | 60 | 45 | -- | -- | -- | 27 | 62 | -- |
| Fidler | 74 | 58 | 56 | 50 | 77 | 25 | 58 | 64 |
| Gillis | 22 | 48 | 20 | 63 | 67 | 45 | 52 | 69 |
| Green | 56 | 59 | 43 | 51 | 54 | 63 | 56 | 51 |
| Herzberg | 67 | 70 | 62 | 53 | 74 | 55 | 69 | 66 |
| Kishenskt | 37 | 39 | 63 | -- | -- | 12 | 56 | -- |
| Kostuk | 57 | 69 | -- | -- | 67 | -- | 58 | 56 |
| Lane | 64 | 77 | -- | -- | 82 | 60 | 63 | 66 |
| Macrae | 64 | 71 | 60 | 55 | 70 | 54 | 72 | 64 |
| Mowbray | 47 | 31 | 70 | 71 | 36 | 15 | 58 | 52 |
| Murry | 69 | 74 | 60 | 72 | 43 | 15 | 61 | 51 |
| Potter | 59 | 63 | 58 | 57 | 60 | 21 | 56 | 44 |
| Rainsforth | 73 | 70 | 60 | 60 | 45 | 78 | 56 | 74 |
| Roughley | 34 | 47 | 64 | 45 | 64 | 36 | 59 | 75 |
| Schroffel | 50 | 36 | 41 | 62 | 52 | 33 | 55 | 51 |
| Scholey | 54 | 68 | -- | -- | 62 | 27 | 54 | 50 |
| Scott | 61 | 54 | 57 | 63 | 62 | 43 | 55 | 46 |
| Taylor | 37 | 30 | 50 | 82 | 62 | 8 | 59 | 56 |
| Watt | 34 | 30 | 66 | 50 | 56 | 31 | 60 | 60 |
| Williams | 60 | 56 | -- | 58 | 65 | 45 | 58 | 46 |
| Wraight | 60 | 57 | 42 | -- | 54 | 36 | 59 | 46 |
| Yurchuk | 59 | 67 | 60 | 50 | 57 | 5 | 56 | 74 |
| Baldry | 67 | 77 | -- | -- | 77 | 22 | 56 | -- |
| Carson | 33 | 32 | 70 | 44 | 63 | 52 | 63 | 52 |
| Cheston | 69 | 68 | 51 | 74 | 62 | 14 | 69 | 56 |
| Lucas | 75 | 70 | 60 | -- | 66 | 78 | 58 | 66 |
| Quilley | 38 | 41 | -- | -- | 73 | 52 | 50 | -- |
| Tysoe | 53 | 37 | 60 | 45 | 61 | 61 | 54 | 48 |
| Usher | 59 | 85 | 62 | 57 | 71 | 71 | 58 | 72 |
| Averages | 56 | 55 | 54 | 58 | 62 | 38 | | 58 |

TABLE 3.

RAW SCORES ON CHRISTMAS EXAMINATIONS.

GROUP 8.

| 1931-1932. | Typewriting. | Shorthand | Bookkeeping | British English | Spelling | Penmanship | Arithmetic. |
|---|---|---|---|---|---|---|---|
| Barton | 54 | -- | 40 | -- | 45 | 74 | 47 |
| Brown | 81 | 59 | 66 | 60 | 72 | 51 | 58 |
| Brown, Mary | 12 | 43 | 58 | 55 | 18 | 50 | 47 |
| Boyton | 54 | 30 | 34 | 65 | 12 | 57 | -- |
| Bridges | 63 | 83 | 92 | 70 | 72 | 75 | -- |
| Clendenning | 60 | 66 | 54 | 66 | 60 | 57 | 23 |
| Cowley | 66 | 89 | -- | 55 | 78 | 73 | 50 |
| Craig | 74 | 52 | -- | 58 | 20 | 50 | 89 |
| Dedeluk | 81 | 68 | 50 | 58 | 62 | 52 | 61 |
| Fryer | -- | 65 | 76 | 64 | 44 | 59 | 56 |
| Gathercole | 26 | -- | -- | 60 | 30 | 57 | 68 |
| Holdsworth | 53 | 93 | 74 | 55 | 57 | 75 | 30 |
| Holdsworth, R. | 24 | 88 | 80 | 65 | 54 | 69 | 23 |
| Hollingsworth | 88 | -- | -- | 56 | 34 | 73 | 74 |
| Kostyk | 53 | 89 | 81 | 74 | 84 | 58 | 79 |
| Mays | 80 | 60 | 57 | 52 | 64 | 55 | 66 |
| McKerroll | 57 | 40 | 50 | 60 | 15 | 71 | 46 |
| McSporran | 65 | 52 | -- | 50 | 35 | 64 | 52 |
| Miller | 76 | 50 | 53 | 52 | 28 | 50 | 66 |
| Mitchell | 81 | -- | -- | 64 | 82 | 71 | 45 |
| O'Neill | 30 | 24 | 36 | 58 | 21 | 54 | 55 |
| Payzant | 31 | 57 | 58 | 54 | 61 | 56 | 44 |
| Prokopiu | 61 | 54 | 29 | 64 | 34 | 57 | 79 |
| Rankin | 72 | 68 | 50 | 50 | 57 | 46 | 68 |
| Thorne | 56 | 39 | -- | 56 | 6 | 50 | 12 |
| Veats | 41 | 56 | 39 | 62 | 7 | 57 | 17 |
| Warzaski | 90 | 85 | 82 | 71 | 88 | 55 | 81 |
| White | 80 | 76 | 82 | 67 | 62 | 50 | 86 |
| Beresford | 83 | 57 | 59 | 65 | 75 | 56 | 56 |
| Cherney | 45 | 33 | 61 | 66 | 52 | 63 | 40 |
| Ewers | 62 | 77 | 73 | 63 | 26 | 54 | 67 |
| Greenough | 40 | 88 | 61 | 58 | 55 | 72 | 36 |
| Jamieson | 52 | 59 | 69 | 54 | 48 | 52 | -- |
| Jeandron | 43 | 31 | 26 | 57 | 23 | 50 | 21 |
| Morris | 54 | 38 | 40 | 40 | 37 | 60 | 44 |
| Munro | 42 | 60 | 74 | 55 | 58 | 54 | 22 |
| Peohlman | 44 | 66 | 77 | 68 | 47 | 58 | 55 |
| Peterson | 8 | 9 | 13 | -- | 4 | 57 | 60 |
| Shalen | 32 | 60 | 60 | 53 | 91 | 65 | 28 |
| Strum | 52 | 46 | 32 | 46 | 17 | 56 | 18 |
| Averages | 56 | 58 | 57 | 61 | 46 | 59 | 51 |

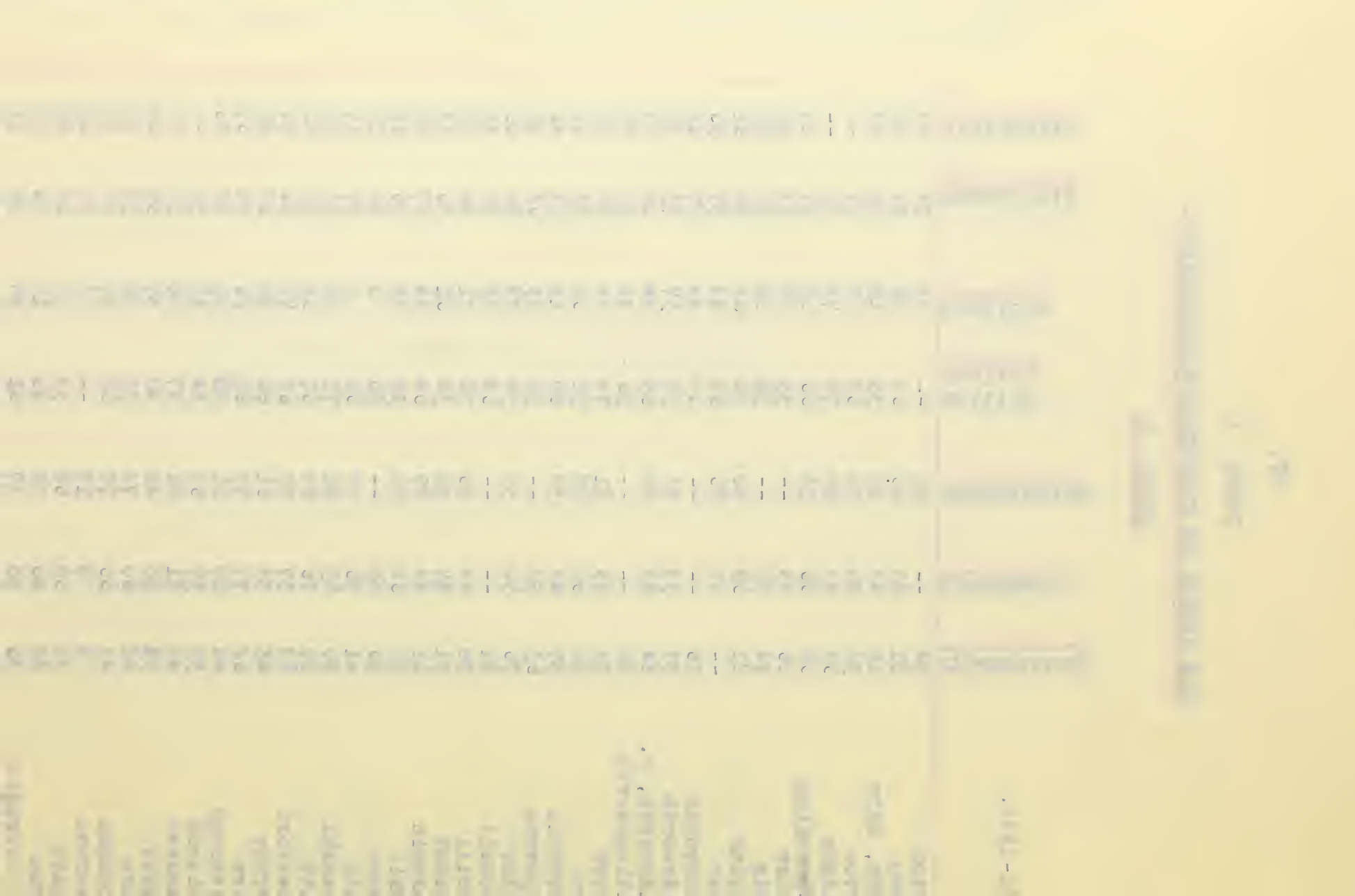

TABLE 4.

RAW SCORES ON CHRISTMAS EXAMINATIONS.

GROUP 11.

| 1931-1932. | Typewriting. | Shorthand. | Literature. | British English. | Spelling. | Penmanship | History. | Arithmetic. |
|---|---|---|---|---|---|---|---|---|
| Blake | 54 | 38 | 50 | 60 | 83 | 60 | 35 | 63 |
| Bowling | 30 | 54 | 82 | 81 | 62 | 59 | 68 | 63 |
| Brown | 78 | 98 | 78 | 83 | 100 | 75 | 79 | 86 |
| Bruce | 48 | 35 | 55 | 54 | 0 | 59 | 65 | 52 |
| Campbell | 30 | 48 | 56 | 73 | 9 | 65 | 51 | 59 |
| Coulson | 24 | 39 | 43 | 48 | 0 | 59 | 54 | 54 |
| Evans | 42 | 45 | 53 | 56 | 23 | 50 | 51 | 63 |
| Everitt | 12 | 73 | 65 | 61 | 63 | 64 | 61 | 67 |
| Fleming | 60 | 48 | 54 | 56 | 49 | 60 | 29 | 39 |
| Fraser | 60 | 61 | 78 | 71 | 80 | 52 | 60 | 52 |
| Gibbs | 75 | 13 | 42 | 62 | 63 | 50 | 51 | 36 |
| Hanson | 84 | 89 | 91 | 80 | 96 | 74 | 85 | 68 |
| Harings | 48 | 42 | 62 | 45 | 19 | 60 | 44 | 34 |
| Hayes | 54 | 47 | 34 | 37 | 13 | 54 | 46 | 58 |
| Johnston | 57 | 63 | 54 | 63 | 42 | 64 | 46 | 70 |
| Joyner | 63 | 79 | 64 | 67 | 52 | 58 | 57 | 68 |
| Kauffman | 66 | 93 | 96 | 95 | 100 | 63 | 94 | 89 |
| Kobeuka | 24 | 45 | 50 | 63 | 88 | 52 | 52 | 31 |
| Lawrence | 100 | 98 | 94 | 77 | 96 | 59 | 89 | 80 |
| Lawrence | 136 | 61 | 79 | 70 | 83 | 49 | 67 | 66 |
| MacKeage | 63 | 37 | 36 | 62 | 69 | 53 | 29 | 46 |
| Mahan | 72 | 67 | 39 | 60 | 58 | 60 | 39 | 48 |
| McIvor | 66 | 62 | 45 | 63 | 54 | 63 | 46 | 76 |
| Pearce | 60 | 97 | 50 | 71 | 79 | 63 | 58 | 91 |
| Pollock | 63 | 63 | 58 | 64 | 67 | 60 | 47 | 33 |
| Rintoul | 81 | 70 | 85 | 91 | 99 | 60 | 76 | 69 |
| Rutherford | 57 | 52 | 55 | 62 | 55 | 73 | 74 | 71 |
| Santer | 78 | 40 | 36 | 74 | 88 | 70 | 45 | 46 |
| Watson | 60 | 89 | 63 | 70 | 67 | 65 | 64 | 68 |
| Williamson | 75 | 65 | 54 | 66 | 89 | 63 | 50 | 70 |
| Bartos | 45 | 42 | 50 | 58 | 0 | 50 | 50 | 49 |
| Brackenbury | 33 | 72 | 61 | 71 | 52 | 59 | 72 | 54 |
| Bree | 27 | 34 | 52 | 57 | 6 | 51 | 58 | 35 |
| Cowen | 42 | 41 | 44 | 55 | 26 | 48 | 54 | 29 |
| Hansen | 60 | 84 | 73 | 66 | 62 | 60 | 65 | 71 |
| Karrer | 69 | 68 | 73 | 59 | 36 | 57 | 73 | 42 |
| Robinson | 0 | 15 | 50 | 44 | 0 | 48 | 50 | 26 |
| Summers | 45 | 66 | 50 | 50 | 37 | 61 | 51 | 42 |
| Averages | 54 | 59 | 60 | 63 | 54 | 60 | 58 | 57 |

TABLE 5.

RAW SCORES ON CHRISTMAS EXAMINATIONS.

GROUP 12.

| 1931-1932. | Typewriting | Shorthand | Literature | British English. | Spelling. | Penmanship | History | Arithmetic |
|---|---|---|---|---|---|---|---|---|
| Allen | -- | -- | -- | 57 | -- | -- | 26 | 63 |
| Anderson | 42 | 43 | 12 | 57 | 16 | 60 | 28 | 63 |
| Benkie | 69 | 93 | 75 | 67 | 76 | 69 | 91 | 62 |
| Bishop | 24 | 56 | 53 | 50 | 10 | 60 | 54 | 28 |
| Bonnett | 78 | 76 | 44 | 62 | 59 | 52 | 44 | 45 |
| Brown | 51 | 80 | 56 | 69 | 79 | 59 | 67 | 65 |
| Campbell | 42 | 35 | 32 | 33 | 39 | 60 | 56 | 59 |
| Christian | 30 | 73 | 42 | 62 | 52 | 70 | 36 | 51 |
| Clynick | 54 | 39 | 28 | 38 | 3 | 52 | 42 | 40 |
| Cohon | 42 | -- | 29 | 55 | 0 | 56 | 40 | 36 |
| Commins | 27 | 65 | 55 | 61 | 65 | 55 | 61 | 60 |
| Fraser | 42 | 77 | 67 | 59 | 30 | 58 | 70 | 55 |
| Hodgsdon | 36 | 71 | 34 | 50 | 44 | 53 | 50 | 52 |
| Kagna | 60 | 67 | 39 | 61 | 33 | 59 | 50 | 46 |
| Karrer | 33 | 59 | 46 | 58 | 53 | 57 | 34 | 35 |
| Keeler | 45 | 67 | 45 | 67 | 48 | 60 | 50 | 41 |
| Keeler, M. | 78 | 57 | 45 | 70 | 49 | 59 | 35 | 49 |
| Lane | 75 | 68 | 35 | 60 | 47 | 71 | 38 | 53 |
| McKenzie | 60 | 43 | 32 | 66 | 9 | 52 | 50 | 50 |
| McLeod | 48 | 28 | 56 | 35 | 40 | 53 | 33 | 13 |
| Neath | 24 | 50 | 61 | 53 | 39 | 51 | 50 | 33 |
| Ogston | 42 | 81 | 55 | 65 | 55 | 70 | 42 | 55 |
| Pogmore | 45 | 45 | 55 | 45 | 30 | 56 | 57 | 50 |
| Potts | 65 | 79 | 40 | 70 | 70 | 56 | 54 | 44 |
| Powers | 100 | 50 | 64 | 69 | 29 | 58 | 57 | 54 |
| Reidford | 65 | 75 | 26 | 58 | 75 | 75 | 41 | 37 |
| Rhodes | 33 | 83 | 68 | 60 | 73 | 51 | 81 | 66 |
| Stuper | 36 | 50 | 50 | 61 | 16 | 60 | 29 | 30 |
| Thompson | 78 | 35 | 62 | 68 | 3 | 54 | 70 | 32 |
| Thornton | 48 | 76 | 51 | 55 | 50 | 59 | 56 | 67 |
| Thorpe | 74 | 80 | 68 | 68 | 56 | 54 | 71 | 55 |
| Turner | 24 | 52 | 24 | 50 | 23 | 65 | 27 | 28 |
| Woods | 54 | 66 | 70 | 49 | 43 | 59 | 53 | 35 |
| Bayly | 39 | 67 | 68 | 59 | 35 | 54 | 67 | 69 |
| McPeek | 24 | 79 | 33 | 55 | 39 | 55 | 55 | 56 |
| Stevenson | 21 | 29 | 30 | 50 | 0 | 53 | 42 | 63 |
| Tyler | 66 | 41 | 56 | 50 | 9 | 48 | 53 | 67 |
| Averages | 48 | 61 | 48 | 58 | 38 | 60 | 51 | 48 |

TABLE 6.

SUCCESSFUL SECTION.

GROUP 3.

| | Xmas Exam. | Mathematics | Stenography | English. | B.C. Survey | Attendance | Age. | Woodworth-Cady Questionnaire. | Attitude to Success and Failure. | No. of evenings per week in study. | No. of hours per evening. | Separate place to study. | One who coaches students at home. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane | 72 | 86 | 70 | 71 | 97 | 74 | 17 | 61-12 | 29-11 | 4 | 1 | no | yes |
| Lucas | 68 | 63 | 73 | 72 | A | 71 | 15 | 56-17 | 22-18 | A | A | -- | -- |
| Usher | 66 | 66 | 72 | 64 | 106 | 78 | 15 | 41-32 | 24-16 | 4 | 1 | no | no |
| Craig | 66 | 70 | 64 | 72 | 93 | 66 | 15 | 49-36 | 25-15 | 5 | 2 | yes | no |
| Barker | 65 | 66 | 67 | 69 | 72 | 79 | 15 | 53-20 | 28-12 | 6 | 2 | yes | no |
| Herzberg | 65 | 64 | 68 | 62 | 68 | 78 | 15 | 48-25 | 26-14 | 5 | 2 | yes | yes |
| Anderson | 65 | 66 | 72 | 53 | A | 78 | 16 | 61-15 | 32- 8 | 5 | 2 | yes | yes |
| Rainsforth | 65 | 67 | 71 | 51 | 82 | 75 | 16 | 45-29 | 24-16 | 5 | 2 | yes | yes |
| Macrae | 64 | 62 | 67 | 60 | 103 | 65 | 16 | 61-12 | 24-16 | 5 | 2 | no | yes |
| Brackenbury | 63 | 59 | 72 | 61 | 83 | 77 | 16 | 39-34 | 27-13 | 4 | 2 | yes | yes |
| Kostuk | 61 | 56 | 63 | 67 | 92 | 78 | 17 | 38-33 | 25-15 | 5 | 1 | no | no |
| Cozak | 61 | 65 | 66 | 52 | 67 | 78 | 15 | 25-38 | 15-25 | 5 | 2 | yes | yes |
| Baldry | 60 | -- | 72 | 49 | 109 | 79 | 17 | 47-25 | 28-12 | 1 | 1 | yes | no |
| Cheston | 58 | 53 | 68 | 50 | 95 | 78 | 16 | 52-21 | 24-16 | 4 | 1 | no | yes |
| Fidler | 58 | 60 | 66 | 50 | 97 | 77 | 14 | 52-16 | 33- 7 | 3 | 1 | yes | yes |
| Bishop | 57 | 74 | 46 | 50 | 70 | 79 | 17 | 37-36 | 20-20 | 5 | 2 | yes | yes |
| Murray | 56 | 55 | 71 | 43 | 92 | 79 | 16 | 56-17 | 27-13 | 2 | 1 | yes | yes |
| General Group Average | 57 | 56 | 55 | 53 | 85 | 76 | 162 | | | | | | |
| Probable Error of Mean | ± .7787 | ±1.114 | ±1.478 | ±1.77 | ± 1.82 | ±.391 | | | | | | | |
| Standard Deviation | ±7.48 | 10.7 | 14.2 | 17.0 | 17.5 | 3.8 | | | | | | | |
| Success Section Average | 62 | 64 | 68 | 59 | 88 | 76 | 158 | 49-25 | 25-15 | 4.25 | 1.5 | 11-5 | 11-5 |
| Probable Error of Mean | ± .687 | ±1.26 | ± 1.01 | ±1.456 | ±2.197 | ± .703 | | | | | | | |
| Standard Deviation | 4.2 | 7.7 | 6.16 | 8.9 | 13.4 | 4.3 | | | | | | | |

TABLE 6.

FAILURE SECTION.

GROUP 3.

| | Xmas Exam | Mathematics | Stenography | English | B.C. Survey | Attendance | Age | Woodworth-Cady Questionnaire | Attitude to Success and Failure | No. of evenings per week in study | No. of hours per evening. | Separate place to study. | One who coaches student at home. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daws | 49 | -- | 32 | 27 | 68 | 76 | 19 | 43-30 | 22-18 | 3 | 2 | yes | yes |
| Gillis | 48 | 44 | 35 | 50 | A | 71 | 16 | 63- 8 | 30- 6 | 5 | 2 | no | no |
| Watt | 48 | 63 | 32 | 46 | 58 | 79 | 18 | 54-19 | 34-16 | 4 | 2 | no | yes |
| Baker | 48 | 41 | 49 | 48 | 92 | 74 | 16 | 65-11 | 24-16 | 6 | 2 | yes | yes |
| Taylor | 48 | 53 | 35 | 51 | 104 | 79 | 17 | 48-24 | 25-15 | 6 | 2 | no | no |
| Barker | 48 | 55 | 55 | 21 | 64 | 79 | 17 | 46-26 | 26-14 | 5 | 2 | yes | yes |
| Schroffel | 47 | 46 | 43 | 49 | 119 | 71 | 16 | A | A | 3 | 1 | yes | no |
| Kishinsky | 42 | 63 | 38 | 12 | 80 | 74 | 19 | 51-21 | 24-16 | 5 | 2 | yes | yes |
| Dann | 39 | 38 | 44 | 7 | 882 | 79 | 18 | 57-16 | 22-18 | 3 | 1 | yes | no |
| General Group Average | 57 | 56 | 55 | 53 | 85 | 76 | 16.2 | | | | | | |
| Probable Error of Mean | ± .7787 | ± 1.114 | ± 1.478 | ± 1.77 | ± 1.82 | ± .397 | | | | | | | |
| Standard Deviation. | 7.46 | 10.7 | 14.2 | 17.0 | 17.5 | 3.8 | | | | | | | |
| Failure Section Average | 46 | 50 | 42 | 35 | 85 | 76 | 17.3 | 53-19 | 25-15 | 3.9 | 1.6 | 6-5 | 6-5 |
| Probable Error of Mean. | ± .719 | ± 2.158 | ± 1.618 | ± 3.59 | ± 4.27 | ± .719 | | | | | | | |
| Standard Deviation. | 3.2 | 9.6 | 7.2 | 16.0 | 19.0 | 3.2 | | | | | | | |

TABLE 7.

SUCCESSFUL SECTION.

GROUP 8.

| | Xmas Exam | Mathematics | Stenography | English | B.C. Survey | Attend-ance | Age | Woodworth-Cady Quest-ionnaire. | Attitude to Success and Failure | No. of evenings a week in study | No. of hours per evening | Separate place to study. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Warzaski | 78.9 | 81 | 88 | 79 | 98 | 79 | 16 | 45-26 | 24-16 | 4 | 1 | no |
| Bridges | 75.8 | 92 | 73 | 71 | A | 69 | 15 | | | | | |
| Kostyk | 74 | 80 | 71 | 79 | 140 | 77 | 15 | 45-26 | 24-16 | 3 | 1 | no |
| White | 71.9 | 84 | 78 | 64 | 121 | 71 | 15 | 62-11 | 22-18 | 1 | 1 | no |
| Mitchell | 68.6 | 45 | 81 | 73 | A | 70 | 15 | 58-16 | 34- 6 | 1 | 1 | yes |
| Cowley | 68.5 | 50 | 77 | 67 | A | 72 | 16 | 52-21 | 20-20 | 1 | 1 | no |
| Hollingswoth | 65 | 74 | 88 | 45 | 85 | 78 | 16 | 30-43 | 20-20 | 4 | 1 | no |
| Beresford | 64.4 | 57 | 70 | 70 | 63 | 68 | 16 | 56-15 | 30-10 | 4 | 1 | yes |
| Brown | 63.9 | 62 | 70 | 66 | 92 | 77 | 16 | 56-17 | 18-22 | 2 | 1 | yes |
| Holdsworth | 62.4 | 52 | 73 | 56 | 79 | 75 | 15 | 38-35 | 23-17 | 4 | 1 | yes |
| Mays | 62 | 66 | 70 | 58 | 124 | 73 | 16 | 43-30 | 24-16 | 1 | 1 | no |
| Dedeluk | 61.7 | 55 | 75 | 60 | 98 | 78 | 17 | 64- 9 | 21-19 | 3 | 1 | no |
| Fryer | 60.7 | 66 | 65 | 54 | 90 | 56 | 16 | 49-21 | 24-16 | 3 | 1 | no |
| Ewers | 60.3 | 70 | 69 | 44 | 109 | 77 | 17 | 54-19 | 35- 5 | 5 | 2 | no |
| Greenough | 58.6 | 48 | 64 | 56 | 103 | 79 | 16 | 62-11 | 19-21 | 1 | 1 | no |
| Boechlman | 57.8 | 66 | 55 | 58 | 100 | 79 | 17 | 60-11 | 29-11 | 3 | 1 | no |
| Holdsworth | 57.6 | 51 | 56 | 60 | 78 | 74 | 17 | 51-22 | 16-24 | 3 | 1 | yes |
| Craig | 57.2 | 89 | 63 | 39 | 121 | 78 | 17 | 53-22 | 31- 9 | 4 | 1 | no |
| McSporran | 56.3 | 52 | 63 | 43 | 72 | 69 | 16 | 47-25 | A | 2 | 1 | yes |
| Shalen | 55.6 | 44 | 46 | 72 | 85 | 71 | 18 | 39-32 | 23-17 | 5 | 2 | yes |
| Clendenning | 55.1 | 38 | 63 | 64 | 95 | 79 | 18 | 56-16 | 29-11 | 3 | 2 | yes |
| General Group Average | 55 | 54 | 57 | 53 | 92 | 71 | 163 | | | | | |
| Probable Error of Mean | ±1.29 | ±2.11 | ±1.83 | ±1.53 | ±2.23 | ±.63 | | | | | | |
| Standard Deviation | 1.21 | 19.8 | 17.2 | 14.4 | 20.9 | 5.9 | | | | | | |
| Successful Section Average | 64 | 65 | 69 | 61 | 98 | 74 | 16.2 | 51-22 | 24-16 | 28 | 1.2 | 8-10 |
| Probable Error of Mean | ±1.0 | ±2.28 | ±1.47 | ±1.66 | ±2.84 | ±.795 | | | | | | |
| Standard Deviation | 6.8 | 15.5 | 10.0 | 11.3 | 1.93 | 5.4 | | | | | | |

TABLE 7

FAILURE SECTION.

GROUP 8.

| | Xmas Exam. | Mathematics | Stenography | English | B.C. Survey | Attendance | Age | Woodworth-Cady Questionnaire | Attitude to Success and Failure | No. of evenings per week in study | No. of hours per evening | Separate place to study. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| McKerrol | 48.4 | 48 | 48 | 36 | 75 | 73 | 17 | 52-18 | 22-18 | 1 | 1 | yes |
| Gathercole | 48.2 | 68 | 26 | 45 | 64 | 68 | 17 | A | 18-22 | 2 | 1 | yes |
| Morris | 44.7 | 42 | 46 | 38 | 78 | 76 | 16 | 65- 9 | 22-22 | 1 | 1 | no |
| Boynton | 42 | 34 | 42 | 38 | 80 | 72 | 16 | 63-10 | 19-21 | 3 | 1 | yes |
| Brown | 40.4 | 52 | 27 | 47 | 100 | 79 | 18 | 35-34 | 31- 9 | 3 | 1 | no |
| Veats | 39.9 | 28 | 48 | 34 | 110 | 74 | 16 | 55-18 | 21-19 | 5 | 1 | no |
| O'Neill | 39.7 | 45 | 27 | 40 | 67 | 62 | 17 | 56-17 | 24-16 | 3 | 1 | no |
| Strum | 38.2 | 25 | 49 | 32 | A | 77 | 17 | A | A | 1 | 1 | no |
| Thorne | 36.5 | 12 | 47 | 31 | 60 | 64 | 16 | A | 18-22 | 2 | 1 | yes |
| Jeandron | 35.9 | 28 | 37 | 40 | 58 | 76 | 16 | 48-25 | 23-17 | 4 | 1 | yes |
| General Group Average | 55 | 54 | 57 | 53 | 72 | 71 | 16.3 | | | | | |
| Probable Error of Mean | ±1.29 | ±2.11 | ±1.83 | ±1.53 | ±2.23 | ±.63 | | | | | | |
| Standard Deviation | 12.1 | 19.8 | 17.2 | 14.4 | 20.9 | 5.9 | | | | | | |
| Failure Section Average | 41 | 38 | 40 | 38 | 77 | 72 | 16.5 | 53-19 | 22-18 | 2.4 | 1 | 5-5 |
| Probable Error of Mean | ±.853 | ±3.24 | ±1.94 | ±1.045 | ±2.879 | ±1.15 | | | | | | |
| Standard Deviation | 4.0 | 15.2 | 9.1 | 4.9 | 13.5 | 5.4 | | | | | | |

TABLE 8.

SUCCESSFUL SECTION.

GROUP 12.

| | Xmas Exam. | Mathematics. | Stenography | English | B.C. Survey | Terman. | Attendance | Age. | Attitude to Success and Failure | No. of evenings in study. | No. of hours each evening. | Separate place to study. | One who coaches student at home. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benkie | 75 | 62 | 81 | 73 | 92 | 155 | 79 | 15 | 27-13 | 5 | 1 | yes | no |
| Brown | 66 | 65 | 65 | 68 | 50 | 112 | 79 | 15 | 18-22 | 5 | 2 | yes | no |
| Thorpe | 66 | 55 | 76 | 64 | 69 | 132 | 76 | 15 | 19-21 | 5 | 2 | yes | yes |
| Rhodes | 64 | 66 | 56 | 67 | 104 | 162 | 76 | 17 | | 6 | 2 | yes | yes |
| Power | 60 | 54 | 75 | 54 | 84 | 153 | 74 | 14 | 30-10 | 3 | 1 | yes | yes |
| Potts | 60 | 44 | 72 | 60 | 69 | 112 | 70 | 17 | 29-11 | 4 | 1 | yes | yes |
| Ogston | 58 | 55 | 62 | 58 | 71 | 103 | 79 | 15 | 23-17 | 4 | 1 | yes | no |
| Thornton | 58 | 59 | 63 | 53 | 97 | 136 | 79 | 15 | 31- 9 | 3 | 1 | yes | no |
| Bonnett | 58 | 45 | 77 | 55 | 60 | 117 | 74 | 15 | 25-14 | 5 | 2 | yes | no |
| Fraser | 57 | 55 | 59 | 52 | 88 | 120 | 74 | 14 | 30-10 | 4 | 1 | yes | no |
| Bailey | 57 | 69 | 58 | 54 | 96 | 158 | 74 | 16 | 28-12 | 3 | 1 | no | no |
| Reidford | 57 | 37 | 70 | 53 | 43 | 84 | 70 | 17 | 13-28 | 6 | 1 | no | no |
| Commins | 56 | 60 | 46 | 60 | 61 | 143 | 78 | 17 | 29-10 | 5 | 2 | no | no |
| Lane | 56 | 54 | 71 | 47 | 68 | 99 | 79 | 16 | 23-17 | 3 | 1 | yes | no |
| General Group Average | 51 | 56 | 54 | 48 | 66 | 110 | 71 | 15.7 | | | | | |
| Probable Error of Mean | | ±1.09 | ±1.109 | ±1.18 | ±1.47 | ±2.67 | ±2.65 | ±.708 | | | | | |
| Standard Deviation | 10.5 | 16.4 | 17.1 | 14.1 | 19.9 | 25.5 | 6.8 | | | | | | |
| Successful Section Average | 61 | 56 | 67 | 58 | 70 | 127 | 76 | 15.6 | 25-15 | 4.4 | 1.4 | 11-3 | 2-12 |
| Probable Error of Mean | | ±.938 | ±1.875 | ±1.71 | ±1.21 | ±3.39 | ±4.25 | ±.54 | | | | | |
| Standard Deviation | 5.2 | 10.4 | 9.5 | 6.7 | 18.8 | 23.6 | 3.0 | | | | | | |

TABLE 8

FAILURE SECTION.

GROUP 12.

| | Xmas Exam. | Mathematical | Stenography | English | B.C.Survey | Terman. | Attendance | Age. | Attitude to Success and Failure. | No. of evenings in study. | No. of hours per evening. | Separate place to study. | One who coaches student at home. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hodgson | 49 | 52 | 53 | 43 | 38 | 80 | 76 | 17 | 31- 8 | 6 | 2 | yes | no |
| Pogmore | 48 | 50 | 45 | 65 | 53 | 130 | 74 | 16 | 28-12 | 5 | 1 | no | no |
| Tyler | 48 | 67 | 53 | 38 | 91 | 143 | 76 | 14 | | | | | |
| Campbell | 47 | 59 | 38 | 43 | A | 100 | 63 | 16 | | | | | |
| Karrer | 47 | 35 | 47 | 56 | 51 | A | 72 | 14 | 29-11 | 5 | 1 | no | yes |
| Rhodes | 46 | 34 | 41 | 48 | 65 | 82 | 79 | 16 | 31- 9 | 6 | 2 | no | yes |
| McKenzie | 45 | 50 | 52 | 36 | 60 | 117 | 68 | 17 | 26-14 | 5 | 2 | yes | no |
| Neath | 45 | 33 | 37 | 52 | 92 | A | 70 | 16 | | | | | |
| Bishop | 42 | 28 | 40 | 38 | 103 | 86 | 77 | 16 | 28-12 | 5 | 1 | no | yes |
| Stuper | 42 | 30 | 43 | 42 | 49 | 79 | 76 | 18 | 20-20 | 3 | 2 | no | no |
| Anderson | 40 | 63 | 42 | 28 | 53 | 97 | 79 | 15 | 31- 9 | 5 | 1 | yes | no |
| McLeod | 38 | 13 | 38 | 44 | 60 | 103 | 74 | 15 | 28-12 | 5 | 2 | no | no |
| Clynick | 37 | 40 | 46 | 23 | 61 | 102 | 79 | 15 | 31- 9 | 5 | 2 | no | yes |
| Cohon | 37 | 36 | 21 | 28 | 74 | A | 49 | 17 | 27-13 | 3 | 1 | no | no |
| Turner | 37 | 28 | 38 | 32 | 48 | 95 | 78 | 17 | | 6 | 1 | no | no |
| Stevenson | 36 | 63 | 25 | 27 | 78 | 89 | 67 | 15 | 28-12 | 5 | 1 | no | yes |
| General Group Average | 51 | 56 | 54 | 48 | 66 | 110 | 71 | 15.7 | | | | | |
| Probable Error of Mean | ±1.09 | ±1.707 | ±1.78 | ±1.47 | ±2.07 | ± 2.65 | ± .709 | | | | | | |
| Standard Deviation | 10.5 | 16.4 | 17.1 | 14.1 | 19.9 | 25.5 | 6.8 | | | | | | |
| Failure Section Average | 43 | 43 | 41 | 40 | 65 | 100 | 72 | 15.9 | | 4.9 | 1.2 | 3-10 | 5-8 |
| Probable Error of Mean | ± .759 | ± 2.53 | ± 1.45 | ± 1.95 | ± 3.05 | ± 3.15 | ± 1.28 | | | | | | |
| Standard Deviation. | 4.5 | 15.0 | 8.6 | 11.0 | 18.1 | 18.7 | 7.6 | | | | | | |

TABLE 9.

SUCCESSFUL SECTION.

GROUP 11.

| | Xmas Exam. | Mathematics. | Stenography. | English. | B.C.Survey | Terman. | Attendance. | Age. | Attitude to Success and Failure. | No. of evenings in study. | No. of hours each evening. | Separate place to study. | One who coaches student at home. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kaufman | 87 | 89 | 75 | 97 | 155 | 195 | 78 | 17 | 25-15 | 5 | 2 | yes | no |
| Lawrende | 87 | 80 | 99 | 89 | 113 | 176 | 79 | 14 | 27-13 | 5 | 2 | no | no |
| Brown | 85 | 86 | 88 | 87 | 115 | 163 | 79 | 15 | 32- 8 | 5 | 1 | no | yes |
| Hanson | 81 | 68 | 86 | 89 | 95 | 150 | 78 | 13 | 30-10 | 6 | 1 | no | no |
| Rintoul | 80 | 69 | 76 | 92 | 131 | 172 | 77 | 15 | 23-17 | 5 | 1 | yes | no |
| Pearce | 71 | 91 | 78 | 67 | 87 | 127 | 78 | 14 | 28-12 | 5 | 2 | no | no |
| Watson | 68 | 68 | 74 | 67 | 111 | 158 | 77 | 14 | 25-15 | 5 | 1 | yes | yes |
| Hansen | 68 | 71 | 72 | 67 | 106 | 153 | 78 | 14 | 34- 6 | 5 | 2 | yes | no |
| Williamson | 67 | 70 | 70 | 69 | 112 | 145 | 79 | 14 | 31- 9 | 6 | 2 | yes | no |
| Fraser | 64 | 52 | 61 | 76 | 106 | 152 | 60 | 13 | 32- 8 | 5 | 1 | no | yes |
| Lommel | 64 | 66 | 48 | 77 | 94 | 113 | 79 | 14 | 24-16 | 5 | 1 | yes | no |
| Joyner | 64 | 68 | 71 | 61 | 84 | 131 | 79 | 15 | 30-10 | 5 | 2 | yes | yes |
| Bowling | 62 | 63 | 42 | 75 | 91 | 153 | 78 | 15 | 32- 8 | 5 | 2 | yes | yes |
| Rutherford | 62 | 71 | 54 | 57 | 94 | 150 | 79 | 15 | 35- 5 | 5 | 1 | yes | yes |
| Santner | 60 | 46 | 59 | 66 | 67 | 103 | 78 | 18 | 27-13 | 6 | 2 | yes | no |
| McIvor | 59 | 76 | 64 | 54 | 62 | 110 | 69 | 16 | 17-23 | 6 | 1 | no | yes |
| Brackenbury | 59 | 54 | 52 | 61 | 80 | 115 | 78 | 14 | 20-17 | 5 | 2 | no | yes |
| Karrer | 58 | 42 | 68 | 56 | 86 | 109 | 68 | 16 | 24-14 | 5 | 1 | no | no |
| Everitt | 58 | 67 | 42 | 63 | 71 | 120 | 71 | 14 | A | 5 | 1 | yes | yes |
| Johnson | 57 | 70 | 60 | 53 | 77 | 108 | 76 | 16 | 22-18 | 6 | 1 | no | yes |
| Pollock | 57 | 33 57 | 63 | 63 | 89 | 135 | 76 | 14 | 21-19 | 5 | 2 | no | no |
| General Group Average | 58 | 57 | 56 | 62 | 83 | 125 | 76 | 14.8 | | | | | |
| Probable Error of Mean | ± 1.478 | ± 1.83 | ± 2.07 | ± 1.98 | ± 2.64 | ± 3.38 | ± .645 | | | | | | |
| Standard Deviation | 14.2 | 17.6 | 19.9 | 19.0 | 25.4 | 32.5 | 6.2 | | | | | | |
| Success Section Average | 68 | 67 | 67 | 71 | 96 | 139 | 76 | 14.8 | 27-13 | 5-21.5 | | 11-10 | 10-11 |
| Probable Error of Mean | ± 1.47 | ± 2.12 | ± 2.12 | ± 1.97 | ± 3.100 | ± 3.606 | .706 | | | | | | |
| Standard Deviation. | 10.0 | 14.4 | 14.4 | 13.4 | 21.1 | 24.5 | 4.8 | | | | | | |

TABLE 9.

FAILURE SECTION.

GROUP 11.

| | Xmas Exam. | Mathematics. | Stenography. | English. | B.C. Survey | Terman. | Attendance | Age | Attitude to Success and Failure. | No. of evenings in study. | No. of hours each evening. | Separate place to study. | One who coaches student at home. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| McKeage | 49 | 46 | 50 | 56 | 42 | 98 | 76 | 14 | 26-14 | 6 | 1 | no | no |
| Fleming | 49 | 39 | 54 | 53 | 68 | 74 | 79 | 15 | 33- 7 | 5 | 1 | no | no |
| Gibbs | 49 | 36 | 44 | 56 | 79 | 121 | 52 | 15 | 35- 5 | 5 | 1 | yes | yes |
| Evans | 48 | 63 | 43 | 44 | 76 | 76 | 79 | 14 | 31- 9 | 5 | 1 | no | yes |
| Bruce | 47 | 52 | 41 | 36 | 58 | A | 71 | 14 | A | 5 | 1 | no | no |
| Haringa | 46 | 34 | 45 | 42 | 58 | 94 | 78 | 15 | 29-11 | 5 | 2 | no | no |
| Hayes | 44 | 58 | 50 | 28 | 46 | 87 | 71 | 15 | 33- 7 | 5 | 1 | no | no |
| Cowen | 43 | 29 | 41 | 32 | 77 | 127 | 76 | 14 | 25-13 | 4 | 1 | no | no |
| Coulson | 43 | 54 | 31 | 30 | 37 | 50 | 76 | 14 | 32- 8 | 5 | 1 | no | no |
| Bree | 40 | 35 | 30 | 38 | 72 | 91 | 79 | 16 | 22-18 | 6 | 1 | no | yes |
| Robinson | 29 | 26 | 7 | 31 | 73 | 128 | 65 | 15 | A | | | | |
| General Group Average | 58 | 57 | 56 | 62 | 83 | 125 | 76 | 14.8 | | | | | |
| Probable Error of Mean | ± 1.478 | ±1.85 | ±2.07 | ±1.98 | ±2.04 | ±3.38 | ± .645 | | | | | | |
| Standard Deviation | 14.2 | 17.6 | 19.9 | 19.0 | 25.4 | 32.5 | 6.2 | | | | | | |
| Failure Section Average | 44 | 45 | 40 | 41 | 62 | 95 | 73 | 14.6 | 30-10 | 5.1 | 1.1 | 1-9 | 4-6 |
| Probable Error of Mean | ± 1.14 | ± 2.42 | ±2.54 | ±2.01 | ±2.928 | ± 4.86 | ±1.55 | | | | | | |
| Standard Deviation. | 5.6 | 11.9 | 12.5 | 9.9 | 14.4 | 23.9 | 7.3 | | | | | | |

TABLE 10.

REPEATERS.

| | Xmas Exam. | Mathematics. | Stenography. | English | B.C.Survey | Attendance | Age. | Woodworth-Cady Questionnaire. | Attitude to Success and Failure. |
|---|---|---|---|---|---|---|---|---|---|
| Lucas | 68 | 65 | 73 | 72 | A | 71 | 15 | 56-17 | 22-18 |
| Baldry | 60 | -- | 72 | 49 | 109 | 79 | 17 | 47-25 | 28-12 |
| Daws | 49 | -- | 52 | 27 | 68 | 76 | 19 | 43-30 | 22-18 |
| Watt | 48 | 63 | 32 | 46 | 58 | 79 | 17 | 54-19 | 24-18 |
| Dann | 39 | 38 | 44 | 7 | 82 | 79 | 18 | 57-16 | 22-18 |
| Mitchell | 68.6 | 45 | 81 | 73 | A | 70 | 15 | 58-16 | 34- 6 |
| Cowley | 68.5 | 50 | 77 | 67 | A | 72 | 16 | 52-21 | 20-20 |
| Hollingsworth | 65 | 74 | 88 | 45 | 85 | 78 | 16 | 20-43 | 20-20 |
| Beresford | 64.4 | 57 | 70 | 70 | 63 | 68 | 15 | 56-15 | 30-10 |
| Greenough | 58.6 | 48 | 64 | 56 | 103 | 79 | 16 | 62-11 | 19-21 |
| McSporran | 56.3 | 52 | 63 | 43 | 72 | 69 | 16 | 47-25 | A |
| Shalen | 55.6 | 44 | 46 | 72 | 85 | 71 | 18 | 39-32 | 23-17 |
| McKerrol | 48.4 | 48 | 48 | 36 | 75 | 73 | 17 | 52-18 | 22-18 |
| Gathercole | 48.2 | 68 | 26 | 45 | 64 | 68 | 16 | A | 18-22 |
| Morris | 44.7 | 42 | 46 | 38 | 78 | 76 | 16 | 65- 9 | 20-20 |
| Strum | 38.2 | 25 | 49 | 32 | A | 77 | 17 | A | A |
| Thorne | 36.5 | 12 | 47 | 31 | 60 | 64 | 16 | A | 118-22 |
| Heandron | 35.9 | 28 | 37 | 40 | 58 | 76 | 16 | 48-25 | 23-17 |
| Average | 53 | 47 | 56 | 47 | 755 | 74 | 166 | 51-23 | 23-17 |
| Probable Error of Mean | ± 1.75 | ±2.18 | ±2.88 | ±3.24 | ±2.46 | ±.715 | | | |
| Standard Deviation | 11.0 | 137 | 181 | 204 | 155 | 45 | | | |
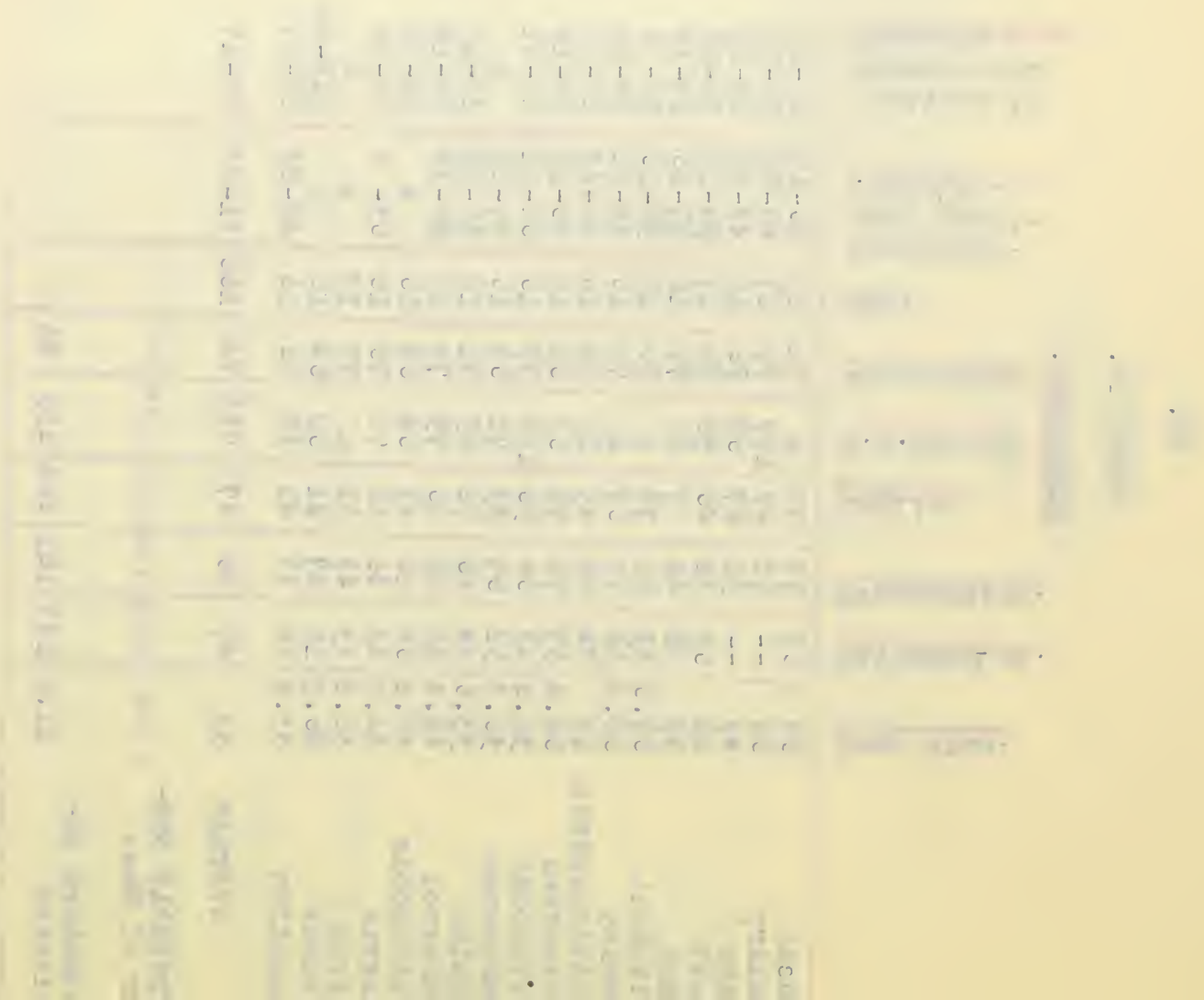
TABLE 11.

SUMMARY OF RESULTS.

GROUP 3.

| | General | Success | Failure |
|---|---|---|---|
| Xmas Exam | 57±.778 | 62±.687 | 46±.719 |
| Mathematics | 56 ± 1.114 | 64±1.26 | 50±2.158 |
| Stenography | 55±1.1478 | 68±1.01 | 42±1.618 |
| English | 53±1.77 | 59±1.456 | 35±3.59 |
| B.C.Survey | 85±1.82 | 88±2.192 | 85±4.27 |
| Attendance | 76 ± .397 | 76 ± .703 | 76 ± .719 |
| A ge | 16.2 | 15.8 | 17.3 |
| Woodworth-Cady | ------ | 49-25 | 53-19 |
| Attitude Test | ------ | 25-15 | 25-15 |

GROUP 8.

| | General | Success | Failure |
|---|---|---|---|
| Xmas Exam | 55±1.29 | 64±1.0 | 41 ± .853 |
| Mathematics | 54±2.11 | 65±2.28 | 38±3.24 |
| Stenography | 57±1.83 | 69±1.47 | 40±1.94 |
| English | 53±1.53 | 61±1.66 | 38 ± .045 |
| B.C.Survey | 92±2.23 | 98.5±2.84 | 77±2.879 |
| Attendance | 71± .63 | 74 ± .795 | 72±1.15 |
| Age | 16.3 | 16.2 | 16.5 |
| Woodworth-Cady | ----- | 51-22 | 53-19 |
| Attitude Test | ----- | 24-16 | 22 -18 |

TABLE 11.

SUMMARY OF RESULTS.

GROUP 11.

| | General | Success | Failure |
|---|---|---|---|
| Xmas Exam | 57±1.478 | 68±1.47 | 44±1.14 |
| Mathematics | 57±1.83 | 67±2.12 | 45±2.42 |
| Stenography | 56±2.07 | 67±2.12 | 40±2.54 |
| English | 62±1.98 | 71±1.97 | 41±2.01 |
| B.C.Survey | 83±2.64 | 96±3.106 | 62±2.929 |
| Terman | 125±3.38 | 139±3.606 | 95±4.86 |
| Attendance | 76 ± .645 | 76 ± .706 | 73±1.55 |
| Age | 14.8 | 14.8 | 14.6 |
| Attitude Test | ----- | 28 - 13 | 30 - 10 |

GROUP 12.

| | General | Success | Failure |
|---|---|---|---|
| Xmas Exam | 51.5±1.09 | 61 ± .938 | 43 ± .759 |
| Mathematics | 48 ± 1.707 | 56±1.875 | 43±2.53 |
| Stenography | 54±1.78 | 67±1.71 | 41±1.45 |
| English | 48±1.47 | 58±1.21 | 40±1.85 |
| B.C.Survey | 66±2.07 | 70±3.39 | 65±3.05 |
| Terman | 110±2.65 | 127±4.25 | 100±3.15 |
| Attendance | 71 ± .708 | 76 ± .54 | 72±1.28 |
| Age | 15.7 | 15.6 | 15.9 |
| Attitude Test | ------ | 25 - 15 | 28 - 12 |

## TABLE 11A.

## THE SUPERIORITY OF THE AVERAGE SCORES OF SUCCESSFUL OVER FAILURE SECTIONS.

| | | | | | |
|---|---|---|---|---|---|
| Xmas Exams | 16 ± .994 | 23±1.31 | 24±2.08 | 18±1.20 | 20.25 |
| Mathematics | 14±2.5 | 27±3.96 | 22±3.14 | 13±3.14 | 19 |
| Stenography | 26±1.9 | 29±2.43 | 27±3.38 | 26±2.24 | 27 |
| English | 24±3.62 | 23±1.97 | 30±2.81 | 18±2.21 | 23.75 |
| B.C.Survey | *3±4.38 | 21.5±4.04 | 34±4.27 | *5±4.56 | 15.9 |
| Terman | ----- | ----- | 44±6.05 | 27±5.29 | 35.5 |
| Attendance | 0 | *2 | *3±1.36 | *4±1.4 | 2.25 |
| Age. | 1.5 | 0.3 | 0.2 | 0.3 | .475 |

*Marks a non-significant difference.

TABLE 12.

RESULTS OF QUESTIONNAIRE ON HOME STUDY.

| | Group 3 | | | | Group 8 | | | |
|---|---|---|---|---|---|---|---|---|
| | Success | | Failure | | Success | | Failure | |
| No. of evenings per week in study | 4.25 | | 3.9 | | 2.8 | | 2.4 | |
| Hours per evening | 1.5 | | 1.6 | | 1.2 | | 1 | |
| | Yes | No | Yes | No | Yes | No | Yes | No |
| Separate place to study | 11 | 5 | 6 | 5 | 8 | 10 | 5 | 5 |
| One who coaches student | 11 | 5 | 6 | 5 | 6 | 4 | 4 | 6 |

| | Group 11 | | | | Group 12 | | | |
|---|---|---|---|---|---|---|---|---|
| | Success | | Failure | | Success | | Failure | |
| No. of evenings per week in study | 5.2 | | 5.1 | | 4.4 | | 4.9 | |
| Hours per evening | 1.5 | | 1.1 | | 1.4 | | 1.2 | |
| | Yes | No | Yes | No | Yes | No | Yes | No |
| Separate place to study | 11 | 10 | 1 | 9 | 11 | 3 | 3 | 10 |
| One who coaches student | 10 | 11 | 4 | 6 | 2 | 12 | 5 | 8 |

TABLE 13.

GROUP 11.

| | Christmas Exams | B. C. Survey Tests | Terman Group Test. |
|---|---|---|---|
| Kauffman | 87 | 155 | 195 |
| Lawrence | 87 | 113 | 176 |
| Brown | 85 | 115 | 163 |
| Hanson | 81 | 95 | 150 |
| Rintoul | 80 | 131 | 172 |
| Pearce | 71 | 87 | 127 |
| Watson | 68 | 111 | 158 |
| Hansen | 68 | 106 | 153 |
| Williamson | 67 | 112 | 145 |
| Fraser | 64 | 106 | 152 |
| Lommel | 64 | 94 | 113 |
| Joyner | 64 | 84 | 131 |
| Bowling | 62 | 91 | 153 |
| Rutherford | 52 | 94 | 150 |
| Santher | 60 | 67 | 103 |
| McIvor | 59 | 62 | 110 |
| Brackenbury | 59 | 80 | 115 |
| Karrer | 58 | 86 | 109 |
| Everitt | 58 | 71 | 120 |
| Johnson | 57 | 77 | 108 |
| Pollock | 57 | 89 | 135 |
| Mahan | 55 | 64 | 104 |
| Blake | 55 | 74 | 106 |
| Kobeuka | 50 | 45 | A |
| Summers | 50 | 68 | |
| MacKeage | 49 | 42 | 98 |
| Fleming | 49 | 68 | 74 |
| Gibbs | 49 | 79 | 121 |
| Evans | 48 | 75 | 76 |
| Campbell | 47 | 60 | A |
| Bruce | 46 | 58 | A |
| Haringa | 44 | 58 | 94 |
| Bartos | 43 | 38 | A |
| Hayes | 43 | 46 | 87 |
| Cowen | 42 | 77 | 127 |
| C oulson | 40 | 37 | 50 |
| Bree | 40 | 72 | 91 |
| Robinson | 29 | 73 | 128 |

Correlation between B.C.Survey and Examination Results = 0.82 ± .0349

Correlation between Terman Group and Examination Results = 0.88 ± .0482

Correlation between Terman Group and B.C.Survey Test = 0.80 ± .041

TABLE 14.

GROUP 12.

| | Christmas Exams. | B. C. Survey Tests | Terman Group Test. |
|---|---|---|---|
| Brenkie | 75 | 92 | 112 |
| Brown | 66 | 50 | 112 |
| Thorpe | 66 | 69 | 132 |
| Rhodes | 64 | 104 | 162 |
| Power | 60 | 84 | 153 |
| Potts | 60 | 69 | 112 |
| Ogston | 58 | 71 | 103 |
| Thornton | 58 | 97 | 136 |
| Bonnett | 58 | 97 | 117 |
| Fraser | 57 | 88 | 120 |
| Bayley | 57 | 96 | 158 |
| Reidford | 57 | 43 | 158 |
| Commins | 56 | 61 | 143 |
| Lane | 56 | 68 | 99 |
| Keeler | 55 | 68 | 128 |
| Woods | 54 | 41 | A |
| Christian | 52 | 49 | A |
| Kagna | 52 | 59 | 95 |
| Thompson | 50 | 55 | 120 |
| McPeak | 50 | 55 | A |
| Pogmore | 48 | 53 | 130 |
| Tyler | 48 | 91 | 143 |
| Campbell | 47 | A | 100 |
| Karrer | 47 | 51 | A |
| Rhodes | 46 | 55 | 82 |
| MacKenzie | 45 | 60 | 117 |
| Neath | 45 | 60 | 117 |
| Bishop | 42 | 92 | 86 |
| Stuper | 42 | 49 | 79 |
| Anderson | 40 | 53 | 97 |
| McLeod | 38 | 60 | 103 |
| Clynick | 37 | 61 | 102 |
| Cohon | 37 | 74 | A |
| Tyner | 37 | 48 | 95 |
| Stevenson | 36 | 78 | 89 |

Correlations between B.C.Survey and Examination Results $= .67 \pm .0613$

Correlations between Terman Group and Examinations Results $= .76 \pm .052$

Correlations between Terman Group and B.C.Survey Test $= .85 \pm .032$

Discussion of Results:

Tables 2, 3, 4, and 5, show the raw scores of groups 3, 8, 11, and 12, respectively, on the Christmas Examinations. These tables are exact transcripts of the school records, and are arranged for the convenience of those who use them there. The blanks in these tables indicate that the student did not take the examination. The group averages are shown at the bottom of each of the tables.

Tables 6, 7, 8, and 9, show the total comparative scores of the Successful and Failure sections of groups 3, 8, 11, and 12 respectively. Below each section of each of these tables will be found a general average covering the whole group. For comparative purposes the Successful Group or Failure Group averages are shown. An asterisk beside any of the names indicates a repeater. The averages of these four tables have been summarized in tables 11 and 12. It will be observed that the Woodworth-Cady Questionnaire was given only to groups 3 and 8; it was not given to 11 and 12.

Noting the results of the Woodworth-Cady Questionnaire, it will be seen that the first figure of the score shows the number of stable answers. The figure following the dash shows the number of unstable ones. The score shown will not total 85, the number of questions in the test. This is due to the fact that the test was padded with 12 questions, the answers to which were disregarded in scoring the tests. In other cases students ommitted the question or underlined both "yes" and "no". The same is true of the test indicating a student's attitude to success

and failure. The first figure indicates the number of natural answers, while the second figure indicates the number of unnatural or rationalized answers.

In table 10 the scores of the repeating students have been summarized. The significance of these scores should be apparent when they are compared with those of Group 3, especially the Successful section.

Tables 13 and 14 give the raw scores of Groups 11 and 12, in the Christmas examinations, the British Columbia School Survey test of Intelligence, and the Terman test of Mental ability, form A. The inter-correlations are also shown.

Interpretation of Results:

When one remembers that the correlation between intelligence test scores and school marks run from 0.40 to 0.60, with 0.50 as the accepted average, it would appear that the correlation shown in tables 13 and 14 are high. These correlations show coefficients of 0.82 between the B.C.Survey test and examination results for Group 11 and 0.67 for Group 12, with an average of 0.745.

Any suggestions as to the unreliability of these scores may be dispelled when one considers the correlations between the Terman Group Test scores and the examination results. Here the correlations run 0,77 for Group 11, and 0.76 for Group 12. If anything, the correlations between mental test scores and examination results are somewhat higher here.

One of the best ways of testing a test is to correlate its scores with those of a well known standardized test. When this was done we found the correlation between the scores of B.C.Survey and the Terman Group test for Group 11 to be 0.80 and for Group 12, 0.85. The average is 0.825. This is considerably higher than the average correlations of the Terman Group test and the average correlations of 13 tests. Sandiford reported this as 0.75.

We are forced therefore to conclude that in commercial schools we are measuring by examinations something intimately connected with what intelligence tests measure. It might be argued that these are highly selected groups. This is probably true. The writer is of the opinion that much lower correlations between intelligence test scores and school marks would be obtained in the second and third years. The reason is, that here more stress is placed on the special skills and vocational technigue.

Tables 11 shows the average score of (1) the whole group (2) the successful section (3) the failure section of Groups 3, 8, 11, and 12 in the Christmas examinations, Mathematics, Stenography, English, B.C.Survey test, Terman test (in 11 and 12) and Attendance. The probable error of each mean score is shown with the score. Table 11A shows the superiority of the successful section over the failure section of the four Groups in the factors mettioned above. This is represented by the difference in the average scores. Along with each mean score

is given the probable error of the difference. Assuming that the difference must be three or four times the probable error of that difference to be significant, we have marked with an asterisk those differences which do not seem to be significant. It will be observed that none of the attendance differences are significant.

Examining tables 11 and 11A we note that there is a difference of 16% in the examination results of Group 3: the B.C.Survey test scores however show a difference of but 3. Evidently, other factors have entered here. In the failure section three students made a score above the average for the whole group. Likewise, in the successful section three students made what would be considered low scores. In Group 8 the difference between the two sections was 23% while the intelligence test scores showed a difference of 21.5. In Group 11 these differences were 24% and 34: in Group 12, 18% and 5. Averaging these differences for the four groups, we find 20.25% on the examinations corresponding to 15.9 in the B.C.Survey test.

Referring to the superiority of the successful over the failure sections in Table 11A, we observe that in Groups 11 and 12, the former was better than the latter by 21% on the Christmas examination. On the Terman test this superiority was 35.5 points. This leads one to question the insignificant difference in the B.C.Survey test score in Group 12. Between the B.C.Survey test and the Terman test this difference increased from $5 \pm 4.56$ to $27 \pm 5.29$.

In the Mathematical group of subjects the difference between the successful and failure sections for Groups 3, 8, 11 and 12 are 14%, 27%, 22%, and 13%, respectively, with an average of 19%: in the Stenography group, 26%, 29%, 27%, and 26% respectively, with an average of 27%: in the English group, 24%, 23%, 30%, and 18%, respectively, with an average of 23.75. Similarly, the successful groups attended school 2.25 more days than the unsuccessful. The successful students were nearly half a year younger on the average than the unsuccessful. Table 11A shows these results in tabular form. The results of the Woodworth-Cady Questionnaire show the successful groups to be slightly more unstable emotionally than the failure groups. The Average number of stable answers was 50 for the successful group and 51 for the unsuccessful: the average number of unstable answers was 23 for the successful and 19 for the failure. In view of the fallibilities of the test and the smallness of the differences, one cannot consider these results significant.

In the test of a student's attitude to success and failure, it was found that the failure sections gave on the average one more natural answer than did the successful. This difference is so small that it cannot be regarded as significant.

Cognizant of all the chances of error in the data, we find that the successful students work about 0.09 more evenings per week on the average than the unsuccessful, that they spend on the average 0.1 more hours per evening. Of the successful students 10.2 on the average reported a separate place to study at home, as compared with 3.7 of the unsuccessful ones. In 7.25

cases, there was someone who often helped the successful student at home: in case of the unsuccessful there was 4.75.

In every particular the successful student has given evidence of superiority. This advantage is not only one of ability but also of opportunity. The differences in some cases are not great enough to indicate a definite tendency. This is seen in case of age and the results of the emotional test. In other cases some significance must be attached to them. For example, it is evident that the superiority of the successful student is closely related to the fact that he attended 2¼ more days out of 79 than did the unsuccessful.

On the basis of the results it would appear that the mathematical subjects will differentiate the successful from the unsuccessful student about as well as the pooled examination results.

Contrasting the scores in the three groups of subjects, it would seem that a successful student is equally good in all three groups, while a failure student is equally poor in all three groups. There are certain exceptions. The observation, however, holds true in the upper and lower halves of the groups referred to.

Examining the lower half of the successful group, we find students failing a few marks in some subject. These failures occur about equally often in Mathematics and English, but more infrequently in Stenography. In the same way the upper half of the failure group usually show a success in some subject. Unsuccessful students are often successful in Mathematics, but only slightly more so than in English.

Studying Table 10 and contrasting it with Table 6, we get a comparison between repeaters and non-repeaters. The non-repeaters are superior to the extent of 4% on the averaged examination results. They are 9% better in Mathematics and 6% better in English but 10% poorer in Stenography. This is to be expected since the repeaters are learning the system for the second time. An Easter examination would convert this into a superiority, in the opinion of the writer.

The non-repeater made nearly 10 points better on the average in the B.C.Survey test of intelligence. They attended school two days more and were slightly younger. The repeaters gave considerably more stable answers on the Woodworth-Cady Questionnaire test than the non-repeaters.

CONCLUSIONS.

On the basis of the results presented, the following conclusions seem justified:

1. There is a relationship between success and failure at a commercial school examination and such factors as general intelligence (when defined as that which is measured by a modern intelligence test), term attendance, age, and home study.
2. The degree of relationship, as measured by coefficient or correlation, between intelligence and commercial school marks is relatively high, ranging from 0.67 to 0.82 with an average of 0.75. While Hollingsworth and Cobb (8) do not indicate an index of comparison, their results stated agree with these.
3. Successful students attend school a few more days than unsuccessful. The relation is much less significant than many teachers believe. This is true, of course, as long as the percent of non-attendance is not too great. These findings agree with those of Odell.
4. Unsuccessful students are more frequently over than under or at the average age of the whole group.
5. When the results are reported by students, successful students spend nearly the same number of evenings per week and hours per evening in study as unsuccessful. More of the successful students have a separate place to study and someone who coaches them often in their studies at home. It might be observed here that Jones and Ruch (11) found that inferior students spend more hours in study than do superior students.

CONCLUSIONS (CONT'D.)

6. Success and failure in an examination are conditioned by a number of factors, the identity and importance of which are not always apparent. No one factor seems to be paramount. However, the superabundance of one factor, like intelligence, may assure success just as the conspicuous absence of it may result in failure.

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